Alliance of the Italian Hospitals Worldwide

Secretariat for Technical Assistance

TELECONSULTATION SERVICE MANUAL

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Reference Documentation

1. IPOCM Project (www.ipocm.ministerosalute.it)
2. Feasibility Study for a network of italian health centres worldwide (www.ipocm.ministerosalute.it).
3. Italian Legislative Decree n. 196 of 30 June 2003, *Codice in materia di dati personali* (Privacy law) G.U. Official Gazette of the Italian Republic n. 174 29/7/2003 – Annex n. 123.
4. Microsoft® Windows™ "User Guide".
5. E-Works - Ew2 Videoconferencing software "User manual" version 2.2.0 - 2005

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INTRODUCTION

This document contains a technical description of the teleconsultation service of the IPOCM Project ("Integrazione e Promozione degli Ospedali e dei Centri sanitari italiani nel Mondo" - integration and promotion of italian hospitals and health centres worldwide), the installation manual and the user guide of the email software application for the implementation of the service.

The asynchronous functonalities of the teleconsultation service, as described in the requirements of the Feasibility Study for an IPOCM data communication network and then specified in the executive project of the Alliance Secretariat for Technical Assistance, allows the exchange via email on the Internet for the despatch of a teleconsultation request by a doctor of an italian hospital worldwide and the reception of a reply from the doctor of the italian referring health through the Secretariat's management centre.

This exchange is made possible through the employment of an email software application specific for the asynchronous teleconsultation provided by the Secretariat, which will be installed on the workstations of the doctors participating the IPOCM project by each italian hospital of the Alliance.

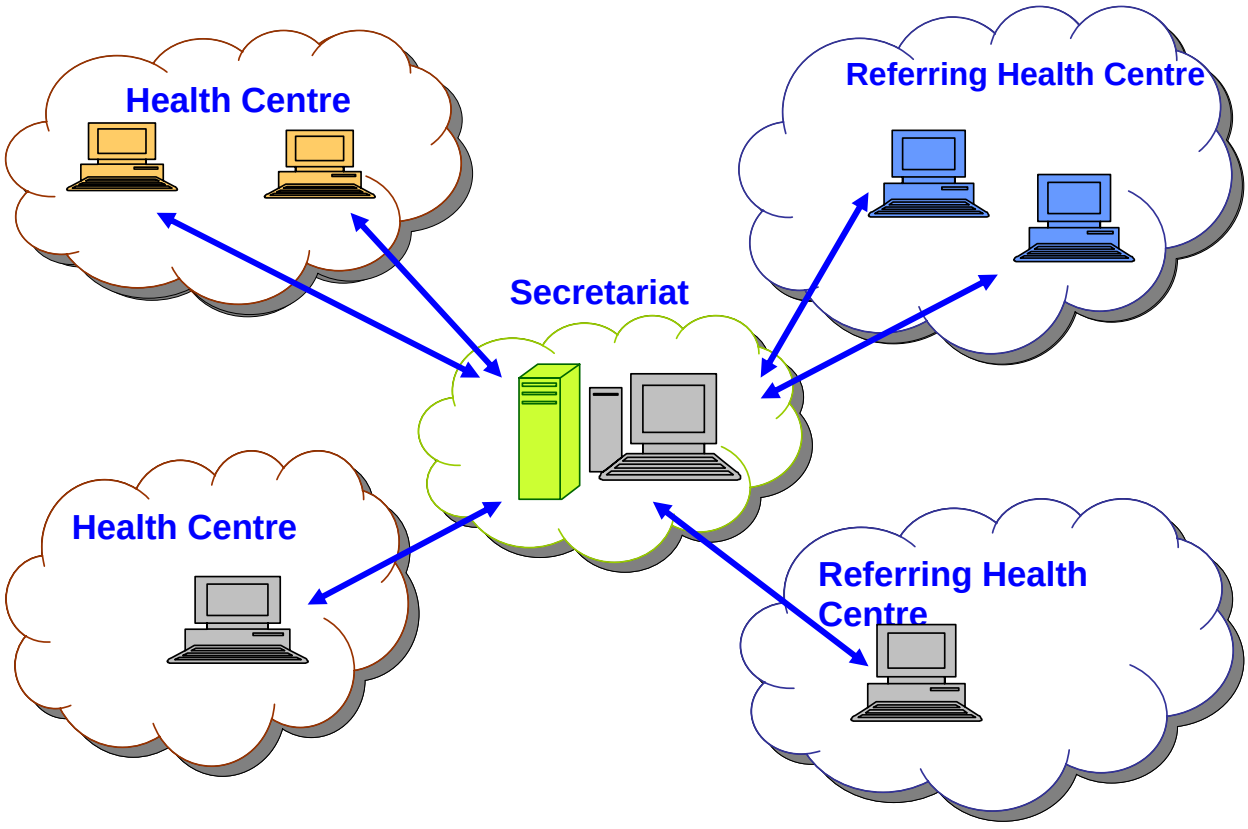
The IPOCM teleconsultation service standards require that the italian referring Health Centre concerned will send the Secretariat's management centre a reply to the teleconsultation requested within 72 working hours from the moment of reception of the request.

The database of the IPOCM teleconsultation service complies with the privacy regulations as current in Italy for the information there contained, including the attachments (ref. docum.: Italian Legislative Decree n.196 of 30 June 2003 "*Codice in materia di dati personali"*).
In particular, health data transmitted through an IPOCM teleconsultation is anonymous, according to the definition given in art. 4 of the above-mentioned Italian Legislative Decree n.196 of 30 June 2003 - *Codice in materia di dati personali (Privacy Code)*: *data which originally or after being treated cannot be associated to an identifiable subject*.

1 ORGANIZATION OF THE TELECONSULTATION SERVICE

1.1 INFORMATION FLOWS

The Secretariat for Technical Assistance receives requests from Italian hospitals worldwide, sends them to the referring health centre in Italy by a routing procedure based on the the pathology routing ICD9-CM indexes provided by the same centre and taking into account the waiting times for obtaining a reply and viceversa,sends the replies back to the applicant.
The application package for the IPOCM teleconsultation is provided in the **Client** version which allows the exchange with the Secretariat for Technical Assistance, as provided by italian "Studio di fattibilità della rete dei centri sanitari italiani nel mondo" (*Feasibility study for a network of italian health centres worldwide).*
However, taking into account any organizational requirement by the health centre requesting it, these centres may employ a **Server** version of the software application which allows the referee to forward the teleconsultation requests to the workstations of the specialists working for the same health centre. In this case the Client workstations will communicate the Server workstation exclusively and the Secretariat's management centre will communicate with this one exclusively.
The installation of the application package on the doctor's workstations and any problem concerning the service operation are responsibility of the Health Centre, holding firm the Secretariat's cooperation to this regard.
The Secretariat's management centre forwards the requests for teleconsultation according to the "routing matrix" of the ICD9-CM codes agreed upon with the italian referring Health Centre .



1.2 SERVICE TECHNICAL SPECIFICATIONS

The email application package for the Client teleconsultation will be installed on the doctor's PC and shall be adequately configurated according to the indications provided by this manual.

In the IPOCM project, the aplication makes us of a mailbox dedicated to the exchange with the Secretariat for Technical Assistance. The e-mail address of this mailbox will be configurated as follows:

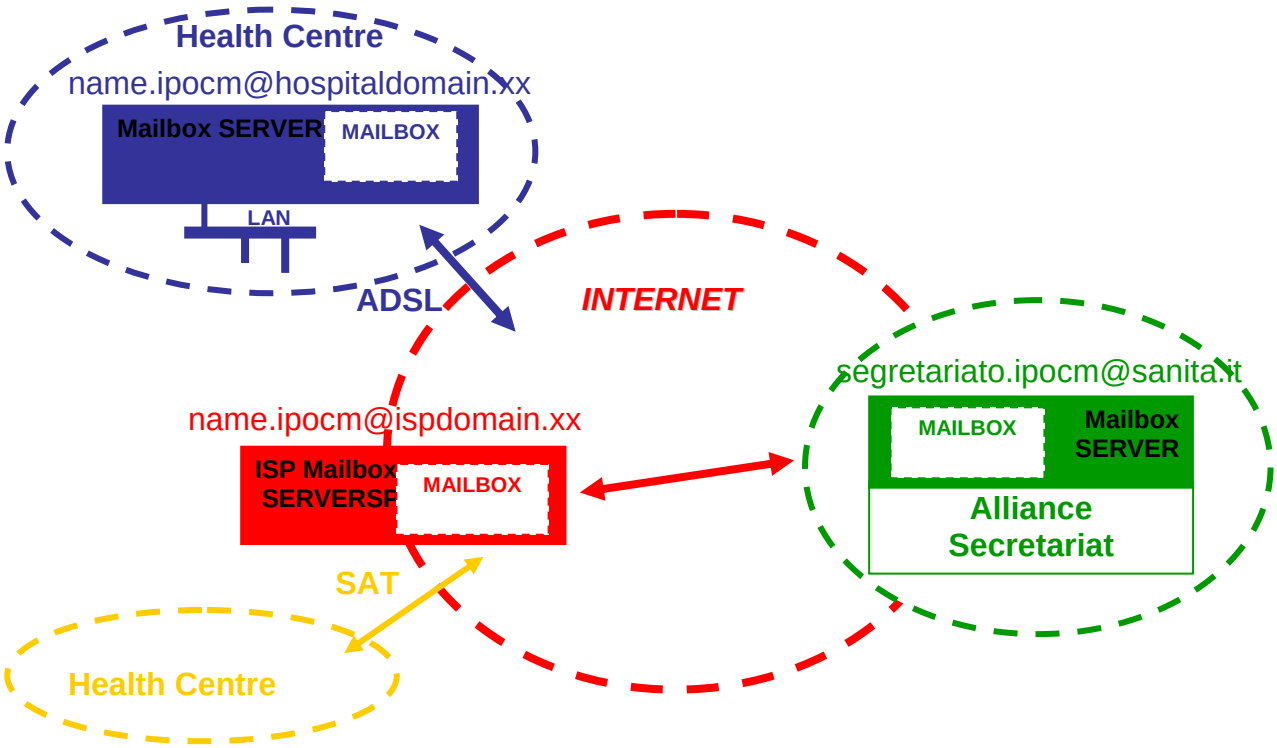
*name***.ipocm@***networkdomain.xx*

where:
- *name:* it may be the name of the hospital or of the hospital department or of the doctor;
- *networkdomain:* it is the name of the domain of the hospital mail server or of the external ISP;

as for the address of the Secretariat's management centre: **segretariato.ipocm@sanita.it**

The teleconsultation software application makes use :

- When transmitting, of the port 25 of the ISP mail server or of the hospital one, with SMTP or ESMTP protocol;
- when downloading, of the port 110 of the ISP mail server or of the hospital one with POP3 protocol.



The teleconsultations are messages in XML (eXtended Markup Language) and in text format.
The current application's version does not run MIME or HTML transcodifications.

The application retrieves the teleconsultation messages from the server and, if the operation is successful, inserts them into the "Incoming" list while deleting them from the mailbox server.
Any other type of message different from a teleconsultation or from a service message will not be acknowledged and will be left in the server mailbox.

The application is therefore unable to read the teleconsultations locally downloaded into the IPOCM workstation from another e-mail application.

In particular, for mailboxes operating on email servers of the Health Centre, it is necessary that, in case the mailbox should be opened with another software application (for example Microsoft Outlook), this application be configurated so as teleconsultation messages and the IPOCM service messages are not locally stored.
In case this should occasionally happen, the mailbox or the mail application must be adequately reconfigurated and a *service message* will be sent to the Secretariat. The Secretariat will forward a copy of the teleconsultations lost, in case their recovery should not be possible (for ex. through a *redirect* command).

For an optimized service, mailbox periodic maintenance operations will be performed, and any error messages or server communications will be deleted as any other type of message which is not a teleconsultation message or *service messages in* text format will, so as to prevent any service interruption due for ex. to an *overflow* of the mailbox capacity or to a downloading stoppage depending on the presence of teleconsultations in a format different from the text format (in particular transcodifications in HTML).

Check for any restriction involving the type and size of the mailbox incoming attachments and, also, always transmit attachments as zipped .
The updating software should be soon installed as soon as it has been received from the Secretariat, and with the same modalities of the basic installation.

Where the updating software has been installed for teleconsultations with videoconsultation function, check that an adequate number of TCP 8081 and UDP 50000 to 65000 ports are open to obtain adequate performance of the multimedia transmission. Also, check the user enjoys Administrator's rights and that the Internet browser is set for downloading and starting ActiveX.

1.3 HARDWARE AND SOFTWARE CONFIGURATION OF IPOCM WORKSTATIONS

The software application may be installed on a IPOCM workstation having the following specifications:

Computer Desktop

- audio-integrated desktop PC fitted with a min.1800 MHz Intel Pentium IV microprocessor motherboard and a Lan provided with four 2.0 USB ports
- min. 256 KB write-back Level-2 cache memory;
- multimedia Kit made up of a pair of external loudspeakers and a microphone;
- 256 MB SDRAM DIMM memory slot;

- Eide UDMA 133 7500 rpm 80 GB Hard disk, ;
- 85 Hz dual head graphic controller provided with a min. 32 MB DDR RAM memory with a 1600 x 1200 resolution and 16,7 million colours.
- Two fans
- Keyboard
- Mouse

Peripherals:

- floppy disk unit
- Min. 32x Standard Bootable CD-ROM reader.
- Min. 19" flat screen colour monitor
- DVD combo unit and min. 650MB CD writer 24xCD-R, 12x CD-RW and 40x for reading
- Web-cam
- Modem
- W/B Printer
- A4 Scanner
- Min. 3.0 MPixel digital camera with a 3X zoom
- Min. 550 Watt UPS for a min. 30-minute backup

Software tools

- Microsoft Windows 2000 Pro (or XP) operating system
- Microsoft Office 2000 software or later
- Browser
- Antivirus Software
- WinZip/Unzip
- Acrobat Reader

Mailbox

- Mailbox capacity of 50 Mb or higher.
- Sending and receiving capacity of min. 8 Mb.
- Management of SMTP (or ESMTP) and POP3 protocols.
- Antivirus and antispam

1.4 DATABASE

Teleconsultation messages have a XML (eXtended Markup Language) structure in text format. On sending and receiving a teleconsultation, data contained in the forms of the application installed on the IPOCM workstations, as described in following chapters, together with data concerning the workstation traffic, are stored in a local Access database. The Alliance's database obviously contains the information relative to all the teleconsultations sent and received on the IPOCM network and the respective traffic data.

Here below data concerning information included in the database is reported as a reference.

TELECONSULTATIONS SENT AND RECEIVED:

Identifier of the teleconsultation
Identifier of the clinical case
Identifier of the case already treated
Identifier of the videoconsultation
Code and name of the requesting hospital
Code and name of the replying hospital
Name and Surname of the requesting doctor
Name and Surname of the replying doctor
Reception date and time requested
Reading date and time requested
Despatch date and time requested
Date and time of reception of a reply
Date and time of reading of a reply
Date and time of despatch of a reply
Status of the request as matched to the service standards required
Message size
Attachments
Encoding
Priority requested
Speciality requested
Gender
Age
Weight
Height
Description of the case history
Description of the clinical examination broken down as per:
- Psychic state
- Skin and mucous membranes
- Head and neck
- Chest
- Abdomen
- Back and limbs
- Inguinocrural regions
- Exploratory actions

Diagnosis description
ICD9-CM code and description
Description of the pharmacological therapy being administered as per:
- Proximate principles
- Dosage
- Posology
- Mode of administration

Description of the pharmacological therapy broken down as per:
- Proximate principles
- Dosage
- Posology

Mode of administration
Description of other current therapies
Description of other previous therapies
Description of the diagnosis query
Description of the diagnosis reply
ICD9 - CM code and description of diagnosis reply
Description of the therapy recommended
Description of the examinations recommended

SERVICE AND VIDEOCONSULTATION RESERVATIONS MESSAGES

Identifier of the message
Date and time of reception
Date and time of despatch
Despatch Centre
Reception Centre
Message subject
Encoding
Description of the message
Message size
Attachments

ATTACHMENTS:

File identifier
Identifier of the message to which the file is attached
File name
File extension
File size
File contents broken down as per:
Imaging
Tracing
Reporting
Other

2 INSTRUCTIONS FOR THE SOFTWARE INSTALLATION

The instructions reported below refer to the installation of the package onto a Health Centre IPOCM workstation equipped with hardware and software facilities as described in this manual.

Insert the software CD-ROM into the CD-ROM drive.
The language window will automatically be displayed (Fig 1).
The software is intended for installation onto the IPOCM workstations which are fitted with a Windows 2000 Professional or Windows XP operating system.

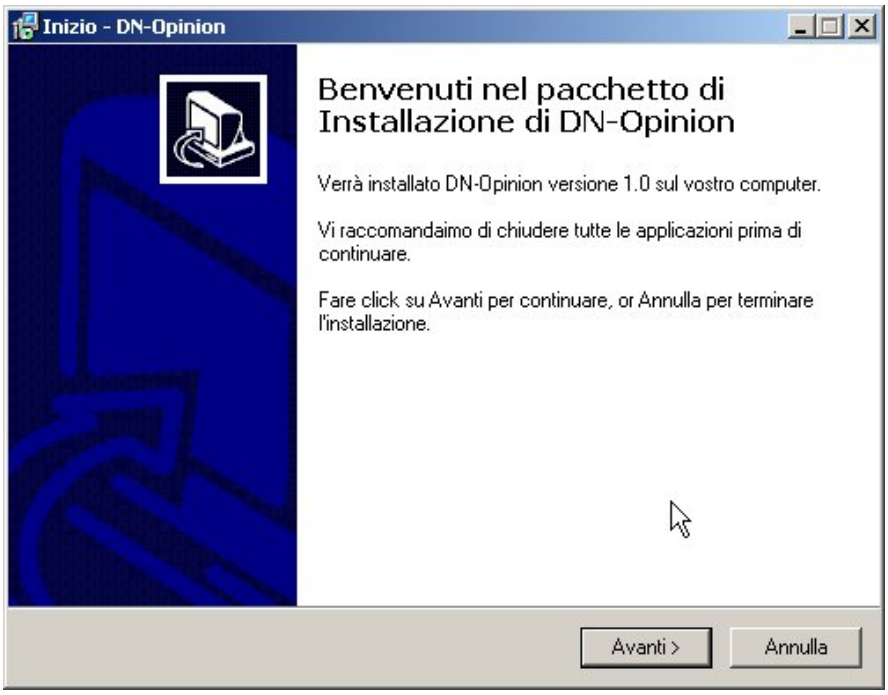
For the software to be installed system administrator rights are required.

If the installation window should not automatically be displayed, click on “Computer resources” and then double-click on the CD-ROM peripheral, hence open the directory and double click on the “Setup.exe” file .

For basic information about the employment of the Windows programme, refer to Microsoft® Windows™, User Guide.

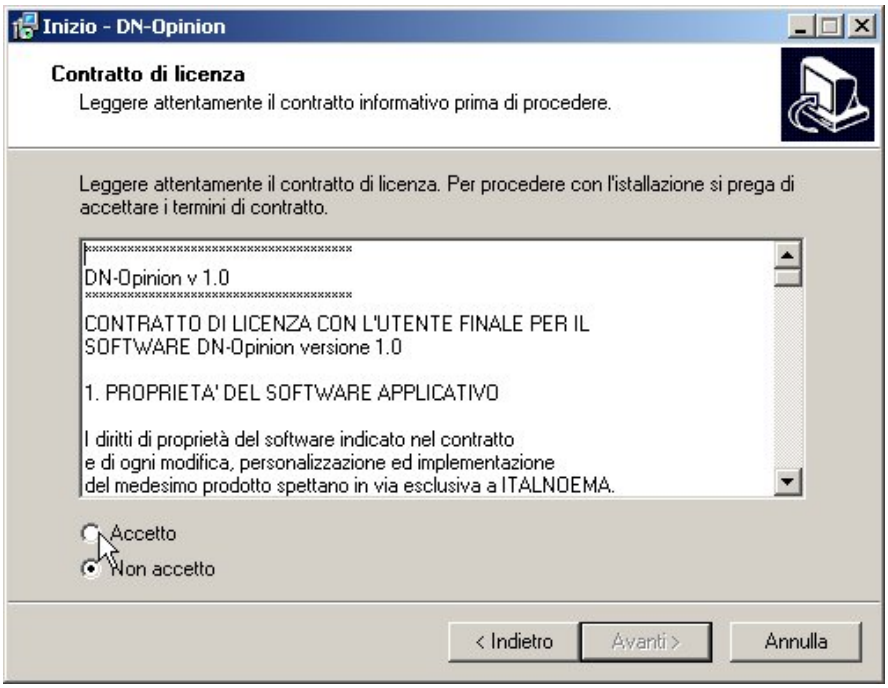
Figure 1 – Choose the language

Figure 2 – Installation starting window


Inizio - DN-Opinion
Benvenuti nel pacchetto di Installazione di DN-Opinion
Verrà installato DN-Opinion versione 1.0 sul vostro computer.
Vi raccomandaimo di chiudere tutte le applicazioni prima di continuare.
Fare click su Avanti per continuare, or Annulla per terminare l'installazione.
Avanti >
Annulla

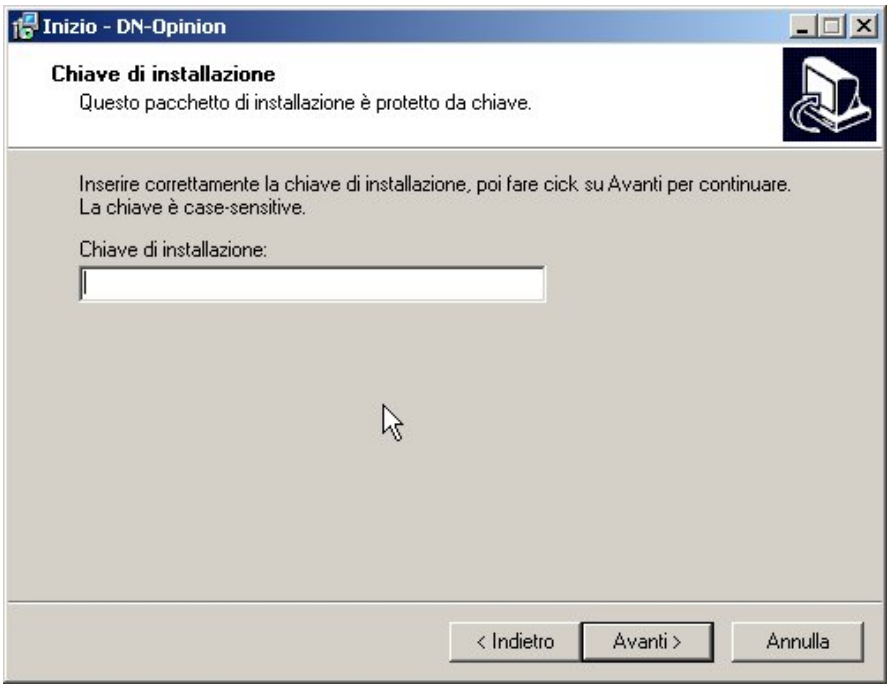
Start the installation procedure by clicking on the button “Forward” (Fig.1). Proceed with replying to the request for acceptance of the software licence agreement (Fig. 3)

Figure 3 – Accept the licence agreement


Inizio - DN-Opinion
Contratto di licenza
Leggere attentamente il contratto informativo prima di procedere.
Leggere attentamente il contratto di licenza. Per procedere con l'istallazione si prega di accettare i termini di contratto.
DN-Opinion v 1.0
CONTRATTO DI LICENZA CON L'UTENTE FINALE PER IL SOFTWARE DN-Opinion versione 1.0
1. PROPRIETA' DEL SOFTWARE APPLICATIVO
I diritti di proprietà del software indicato nel contratto e di ogni modifica, personalizzazione ed implementazione del medesimo prodotto spettano in via esclusiva a ITALNOEMA.
Accetto
Non accetto
< Indietro
Avanti >
Annulla

Insert the installation key (Fig. 4) consisting in a sequence of digits and letters (whether uppercase or lowercase) provided together with the CD-ROM and click on the button “Forward”.

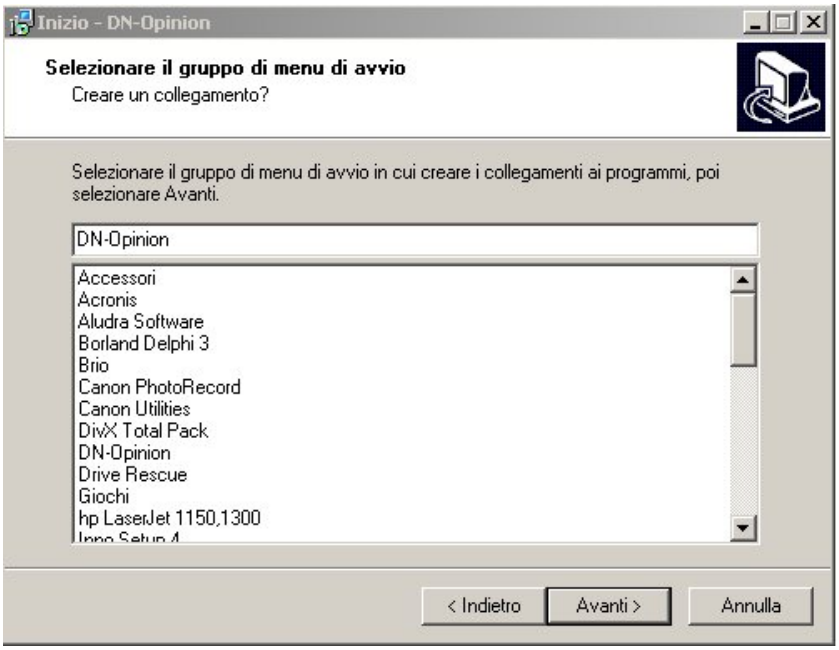
Figure 4 – Insert the installation key


Inizio - DN-Opinion
Chiave di installazione
Questo pacchetto di installazione è protetto da chiave.
Inserire correttamente la chiave di installazione, poi fare cick su Avanti per continuare.
La chiave è case-sensitive.
Chiave di installazione:
< Indietro
Avanti >
Annulla

.

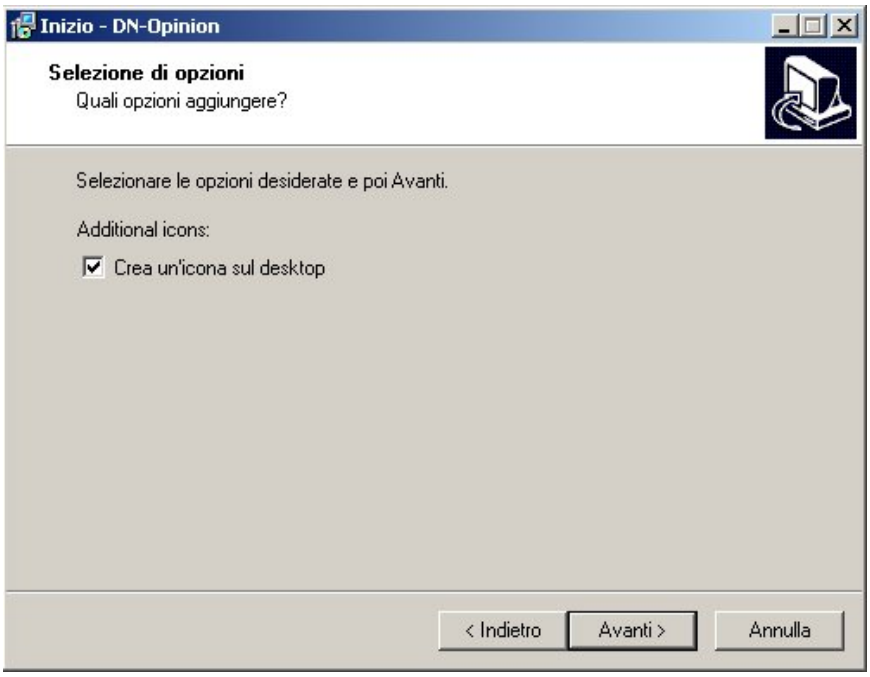
The name of the default folder is displayed. To install the software in the default folder, click on the button “Forward” in Fig. 5, or else select a different option in the list provided.

Figure 5 –Select the link to the programs



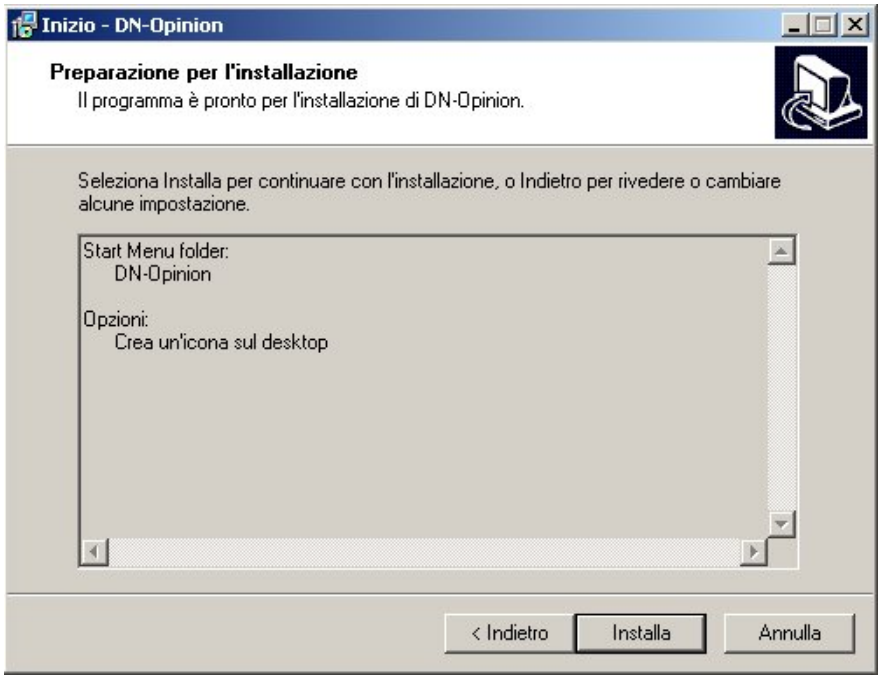
Click on the button “Forward” in Fig. 6 to obtain the icon of the teleconsultation on the desktop.

Figure 6 – Create desktop icon



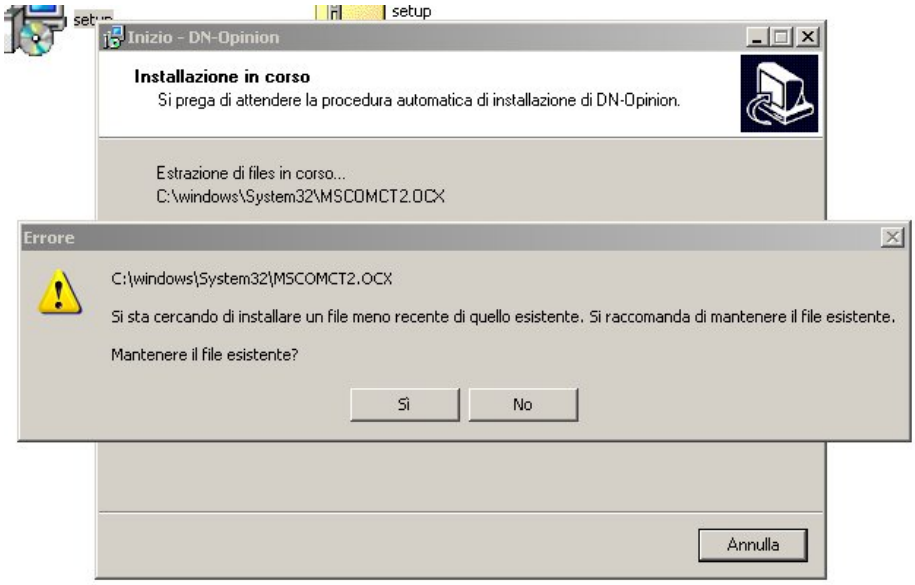
The phase preparing the installation is over. Click on the button “Install” in Fig. 7 to start the installation.

Figure 7 – Execute the installation



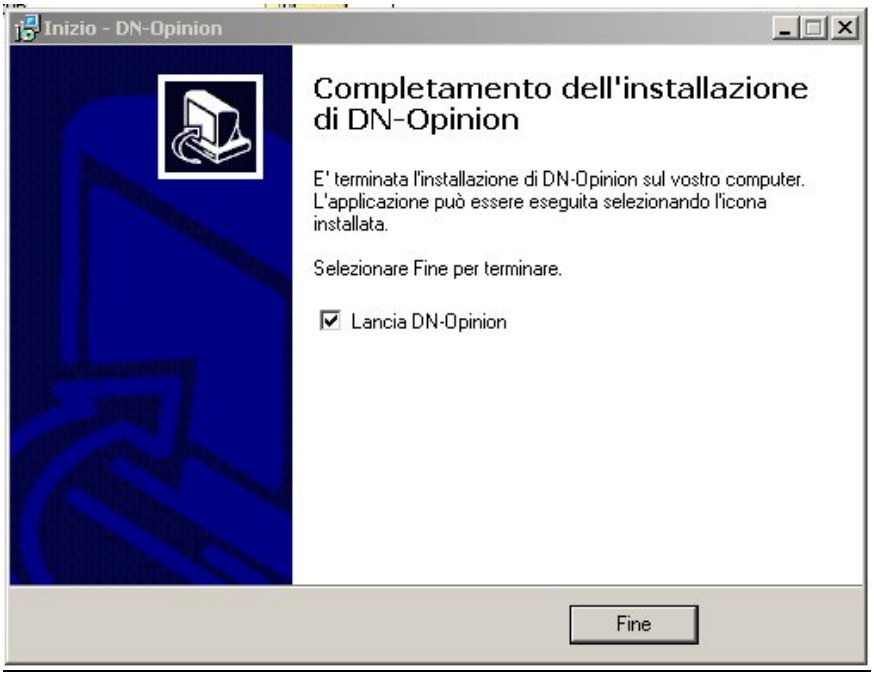
The installation is starting. If the window appears as shown in Fig. 8, click on the button “Yes”.

Figure 8 – Warning message


setup
Inizio - DN-Opinion
Installazione in corso
Si prega di attendere la procedura automatica di installazione di DN-Opinion.
Estrazione di files in corso...
C:\windows\System32\MSCOMCT2.OCX
Errore
C:\windows\System32\MSCOMCT2.OCX
Si sta cercando di installare un file meno recente di quello esistente. Si raccomanda di mantenere il file esistente.
Mantenere il file esistente?
Sì
No
Annulla

At the end of the installation, the message of installation completed will be displayed (Fig. 9), click on the button “End” to close the window and start the application.

Figure 9 – Installation completed window


Inizio - DN-Opinion
Completamento dell'installazione di DN-Opinion
E' terminata l'installazione di DN-Opinion sul vostro computer. L'applicazione può essere eseguita selezionando l'icona installata.
Selezionare Fine per terminare.
Lancia DN-Opinion
Fine

The icon of the teleconsultation will be displayed on the desktop.

CAUTION

In case the application has been already installed previously, it must be removed through the "Install/remove" facility in the Windows control panel and then cancelled from the teleconsultation package folder in the C:\programmi folder.

3 TELECONSULTATION APPLICATION

The teleconsultation software application allows to:

- process and send a request for asynchronous teleconsultation to a referrring Health Centre through the Alliance Secretariat for Technical Assistance
- receive the teleconsultaion requests from a requesting Health Centre through the Secretariat and process the relative replies;
- receive the replies through the Secretariat, as processed by a referrring Alliance Health Centre.

The application is a mere mail client application in Italian language, with an online help for the translation into the four foreign languages mostly spoken in the Health Centres (English, Spanish, Portuguese and French). The interface translation may be activated by clicking with the mouse right button on the phrase required for translation.

To start the application, double-click on the icon on the desktop.

3.1 CONFIGURATION

Soon after the software has been installed, the first task to be performed is configurating the exchange with the e-mail server.
For this configuration the relative item in the startup page menu will be clicked on: Setup – Configuration.

In the “General” folder (Fig. 10) the following items will be inserted:

- The name of the Health Centre as sorted out in the pull down menu.
- The workstation univocal serial number in 4 digits (for example: in case two or more workstations for the IPOCM project are employed, enter 0001 for the first one, 0002 for the second one, etc.).
- The e-mail address of the mailbox employed for the teleconsultation (for example: *name*.ipocm@*hospitaldomain*.xx)
- The Secretariat e-mail address (as preset).

CAUTION

The Secretariat acknowledges an IPOCM teleconsultation only if sent from the e-mail address communicated to the Health Centre.

Inside the Server folder (Fig. 11) the following will be set:

- the email IP addresses communicated by the ISP (Internet Service Provider), for the outgoing (SMTP) and incoming mail (POP3) respectively. These addresses may be both IP numerical addreses and alias; if the workstation is connected via LAN to an email server inside the Health Centre, the IP addresses of the outgoing and incoming servers must be input.
- The *account name* and *password* for the connection to the email server or if the workstation is on a LAN, the account name and network password.
- Tick off "Authorization for the outgoing server", if the outgoing mail server requires authorization. In this case, through the button "Config…" it is possible to employ for the authentication the parameters of the outgoing server or of the incoming server, or, it is possible to introduce any other parameters required for the access to the outgoing mail server (Fig. 12).

If the PC employs a LAN to communicate with the mail server, no other configuration operations is required. Differently a remote access connection must be opted for, usually via modem (to be chosen among those which automatically appear, if already configurated through Windows control panel). It is also possible to create a new connection by clicking on the button "Create connection" (Figg. 13 – 14).

Through the "Program" folder it is possible to set the message transmission speed to the mail server, depending on the type of connection employed.

Through the "Connection to server" folder it is also possible to choose the length of the server connection timeout, set by default to 1 minute, and it is possible to choose how often the send/receive operation must be activated automatically, being set every 120 minutes by default .
It is however possible at any time to carry out the receiving operation of teleconsultations present in the mailbox and the dispatch of messages present in the outgoing list, by clicking on the "send/receive" button.
At the end of the configuration operations, send a service message to the Secretariat to signal the Health Centre has been set online and the e-mail address on which the Health Centre will receive the teleconsultations from the Secretariat (in case it should be different from the outgoing mailbox).

Figure 10 – Configuration window – general directory

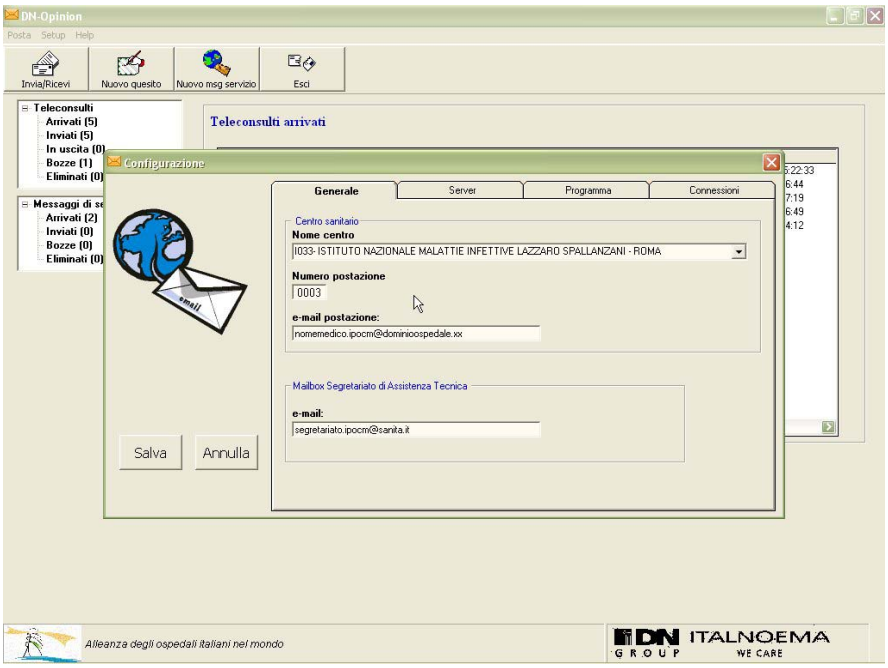


Figure 11 – Configuration window – server folder

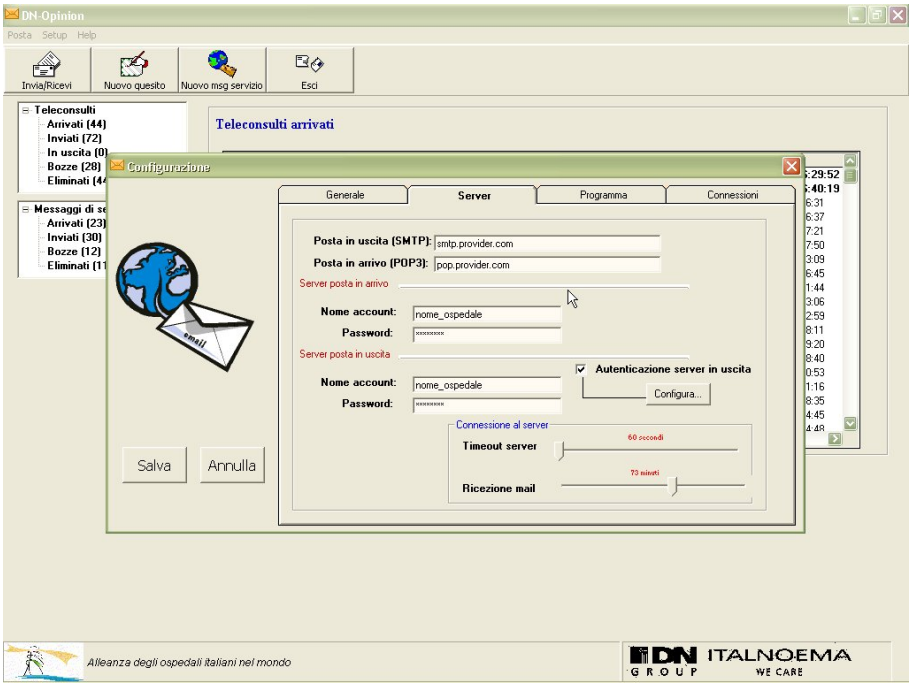


Figure 12 – Configuration window – server folder – authentication

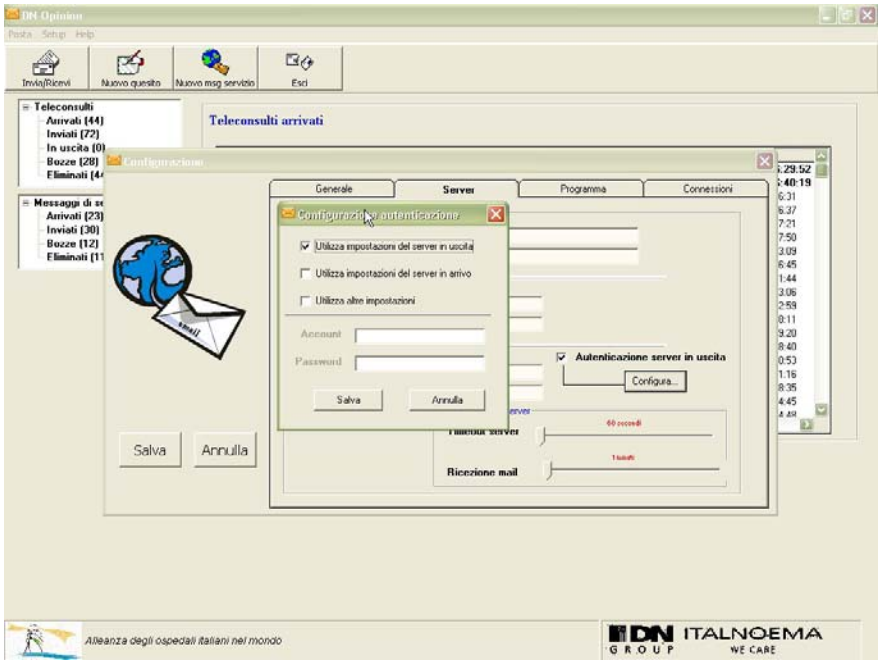
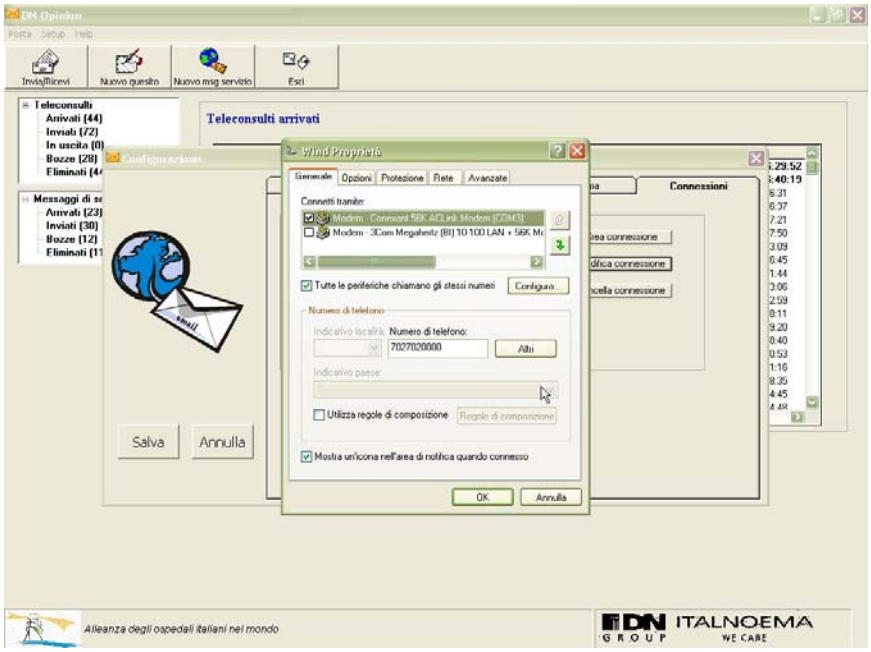


Figure 13 – Alternative connections

Figure 14 – Create a new connection



3.2 TELECONSULTATION LISTS

On starting the teleconsultation application , the window in Fig. 15 will be displayed.
In the upper side of the window there is the Menu of the functions provided:

- " Mail", to activate from the menu the networked receiving and sending functions, the compilation of a teleconsultation and the reduction to icon in the lower right corner of the screen.
- "Setup", to configurate the product, disconnect from the network and activate the TaskBar (icon in the lower right corner of the screen).
- "Help", to display the information and to reset the log files.

After activating the TaskBar or "reducing to icon", any reception of new teleconsultations will generate the display of an icon signalling the arrival of a new teleconsultation in the "Incoming" list.

Four other buttons are available for the most frequent operations:

- "Send/Receive" for the reception through the mailbox of teleconsultations and service messages and for the transmission to the e-mail server of teleconsultations and service messages included in the "Outgoing" list .
- "New query" for the compilation of a teleconsultation request form.

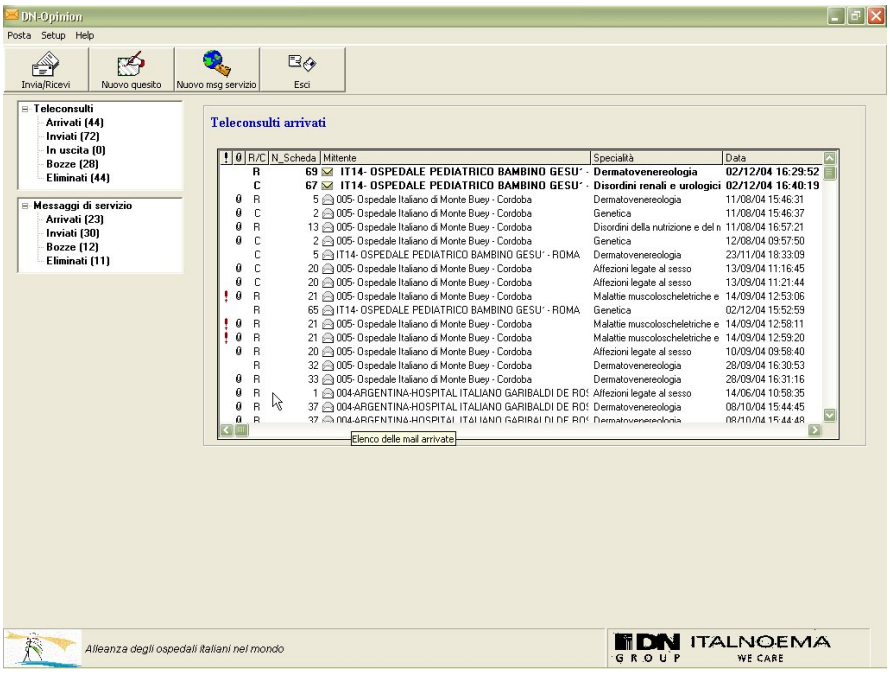
- "New service message" for the compilation of a service message to be sent to the Secretariat or to the server workstation of the Health Centre.
- "Exit" to close the application (check that the list of the "Outgoing" teleconsultations is empty.)

By clicking on the left-sided menu ("Incoming", "Sent", "Outgoing", "Drafts", "Deleted"), the relative teleconsultation list is displayed in the middle of the screen.
Each teleconsultation consists in a request form matched to a reply form.

The request form is filled in by the requesting Health Centre and may be also completed with attachments. During this operation, the reply form is disabled.
The reply form is filled in by the replying Health Centre (usually a referring Centre) and may be also integrated with attachments. During this operation, the request form is displayed but cannot be edited and may include the attachments which can be stored on a file in a folder of the hard disk or of any other peripheral.
The complete teleconsultation (C) includes the request form without attachments and the reply form, also with attachments, which may be stored on a file in a folder of the hard disk or on any other peripheral. Both forms can no longer be changed.

Through each teleconsultation list displayed in the middle of the screen ("Incoming", "Sent", "Outgoing", "Drafts", "Deleted"), it is possible to display some information concerning the message priority, the presence of any attachments, the type of teleconsultation (Request or Including the reply), the order number (automatically added by the Health Centre requesting the teleconsultation), the sender, the operator, the speciality and the date and time of tranmission. Each teleconsultation is univocally identified by an order number and by the code of the requesting Health Centre. The teleconsultation list can be displayed in ascending or descending order by clicking on the fields of the toolbar.

Figure 15 – Teleconsultation starting window



The teleconsultations included in the "Incoming" list have been transmitted by the Secretariat's management centre, or forwarded by the Server of the same Health Centre. The teleconsultations received and not yet read will be shown in bold types. This list will include:

- The teleconsultation requests (R) for which the Secretariat requires a reply within 72 working hours. In case of technical or organizational problems, send a *service message* to the Secretariat through the "Help" menu, indicating the teleconsultation order number and the code of the requesting Health Centre. By double-clicking on a single teleconsultation, it will be displayed. By clicking on a teleconsultation , it may be displayed, cancelled or inserted in/removed from the teleconsultations not yet read (bold types) by using the mouse right key. The teleconsultation requests, once displayed, can be saved in the "Drafts" list, excluding the attachments. The attachments of the teleconsultation request instead may be saved on a file, in a hard disk folder or on any other peripheral and may be displayed.

- The teleconsultations completed (C); By double-clicking on each teleconsultation, it will be displayed. By clicking on a teleconsultation, it may be displayed, deleted or inserted in/removed from the teleconsultations not yet read (bold types) by using the mouse right key. Teleconsultations completed cannot be saved as drafts to be edited and retransmitted. The reply attachments may be saved on a file, in a hard disk folder or on any other peripheral and may be displayed.

The teleconsultations in the "Sent" list will include:

- The teleconsultation requests filled in and sent from the Health Centre to the Secretariat for Technical Assistance; by double-clicking on each teleconsultation, the same can be displayed or deleted using the mouse right button. By clicking on a teleconsultation once, it can be displayed or cancelled using the mouse right button. It cannot be edited, but, once displayed, it may be stored in the "Drafts" list with the attachments to be later edited, if necessary, and sent.

- Replies to a teleconsultation being filled in and transmitted by the referring Health Centre to the Secretariat, or to the Server mailbox of the Health Centre; by double-clicking on each teleconsultation, the same can be displayed. By clicking on a teleconsultation, it can be displayed or cancelled using the mouse right button. The forms cannot be editted, but , the teleconsultation can be stored in the "drafts" list with the attachments to the reply once it has been displayed, to be later edited in the reply form and re-sent, if necessary.

The teleconsultations in the "Outgoing" list include the teleconsultations filled in and ready to be transmitted by clicking on the "Send/Receive" button. By double-clicking on each teleconsultation, the same can be displayed. The teleconsultation displayed cannot be edited, but once displayed, it can be stored with the same procedure as for teleconsultations in the "Sent" list.

CAUTION

Check that the "Outgoing" teleconsultation list is empty, before closing the application for the IPOCM teleconsultation. In case it is not, click on the "Send/Receive" button to transmit the pending teleconsultations.

The teleconsultations in the "Drafts" list contain the drafts of the teleconsultation requests, or the drafts of the teleconsultation replies. Each teleconsultation, once displayed, can be changed and saved again including the amendments. By double-clicking on each teleconsultation, it can be displayed. By clicking on a teleconsultation once, it can be displayed or cancelled using the mouse right button. In case it is a teleconsultation saved out of the "Incoming" list or of a reply to a teleconsultation saved out of the "Sent" list, the attachments to the request form (coming from long distance) will not appear in the form saved and will be displayed only through the original teleconsultation (in the "Incoming" list or in the "Sent" list) or through the file stored on the hard disk or on any other peripheral where they have been saved.

The teleconsultations in the "deleted" list contain the teleconsultations removed from the previous lists. By double-clicking on each teleconsultation, the same can be displayed. By clicking on a teleconsultation once, it can be displayed, definitively deleted, or restored in the original list.

All teleconsultations included in all lists, once displayed, can be printed or saved on a file in a hard disk folder or on any other peripheral as "Record of the IPOCM Teleconsultation" (Fig. 27)

To select more teleconsultations to be deleted, press the <shift> button and click on the first of the them and on the last one. The teleconsultations thus cancelled will appear in the "Deleted" list to be definitively removed or otherwise restored.

3.3 SERVICE MESSAGES

The window shown in Fig. 16, which can be activated through the Service Messages Help menu item - , entitled "Send a message to the Secretariat", allows the dispatch of communications to the Secretariat or to the Server workstation, relative to the teleconsultation service (for ex. notifications of service temporary interruptions, information about availability of the service, notifications of software and network anomalies, technical or organizational problems, requests for explanations etc.).

This message can be attached with one or more files as described for the attachments to the teleconsultation requests (see § 3.4 and relative information).

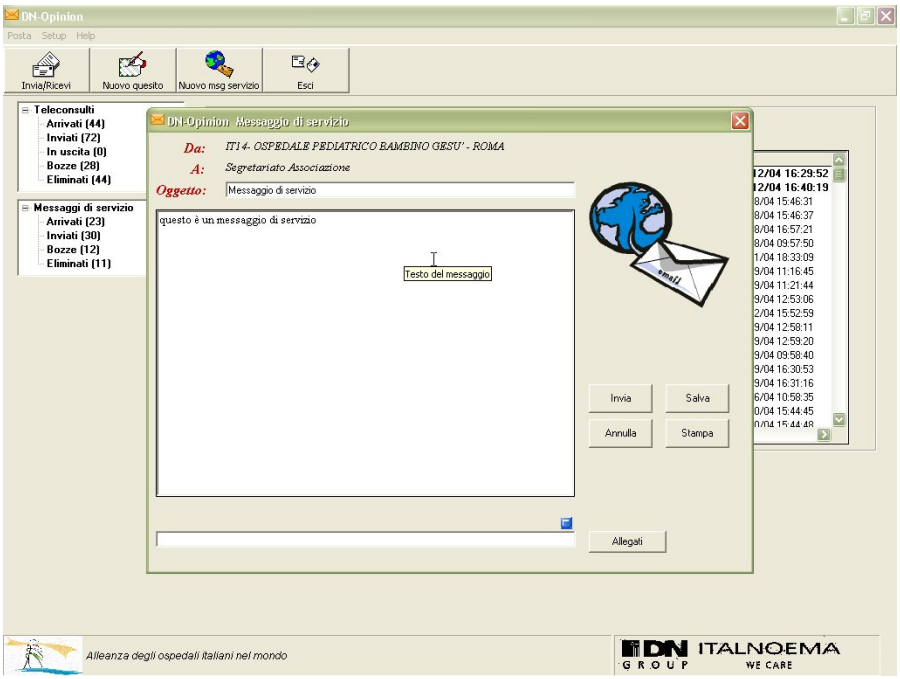
The incoming messages are transmitted by the Secretariat or by the server workstation of the Health Centre and may be displayed through the "Incoming" list. They all come from the Secretariat. Any attachment can be filed and displayed. An incoming message can be replied also through the "Reply" button .

The "Incoming" messages are displayed through the "Sent" list and can be re-sent by using the "Re-send" button.

A new message can be saved in the “Drafts” list, to be retrieved later.
The messages deleted are transferred in the “Deleted” messages list to be definitively removed or otherwise retrieved.
Any message can be printed through the “Print” button.

To select more messages to be definitely deleted, press the button <shift> and click on the first of them and the last one.

Figure 16 – Window for the compilation and despatch of service messages



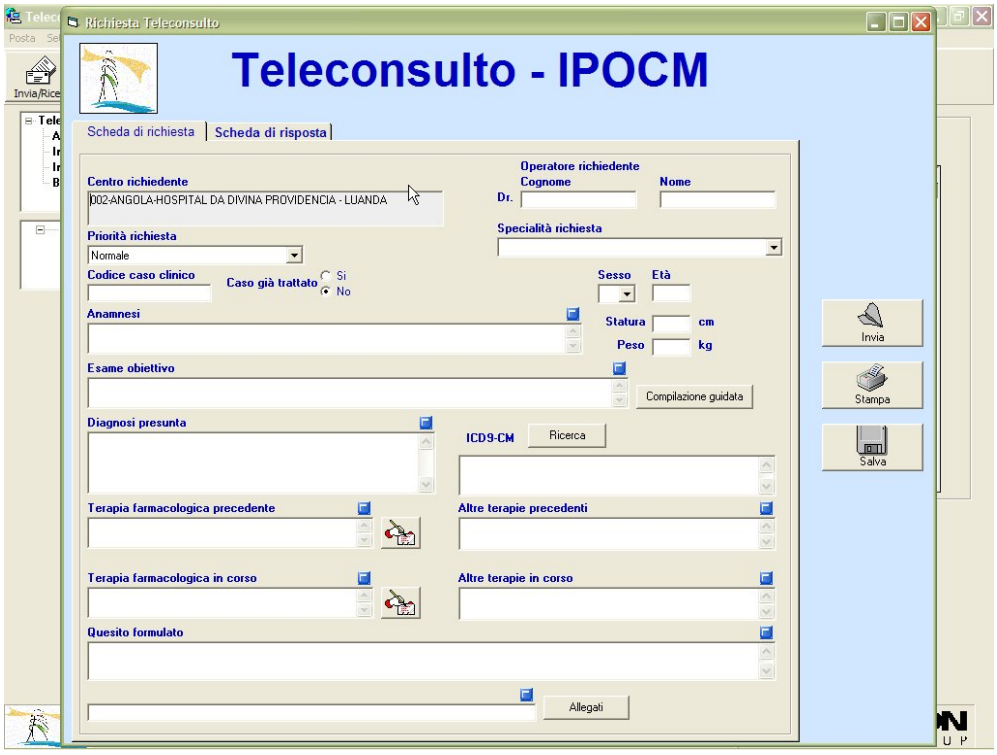
3.4 GENERATION OF A TELECONSULTATION REQUEST FORM

To send a teleconsultation request:

- Select the item “New Query”, which will display the form as shown in Fig. 17;
- Open a teleconsultation previously sent, save it in drafts and edit it.

By clicking on the button “New query”, a form as shown in Fig. 17 will appear. As it is the despatch of a teleconsultation request, the reply form will be disabled.

Figure 17 – Compilation of the request form



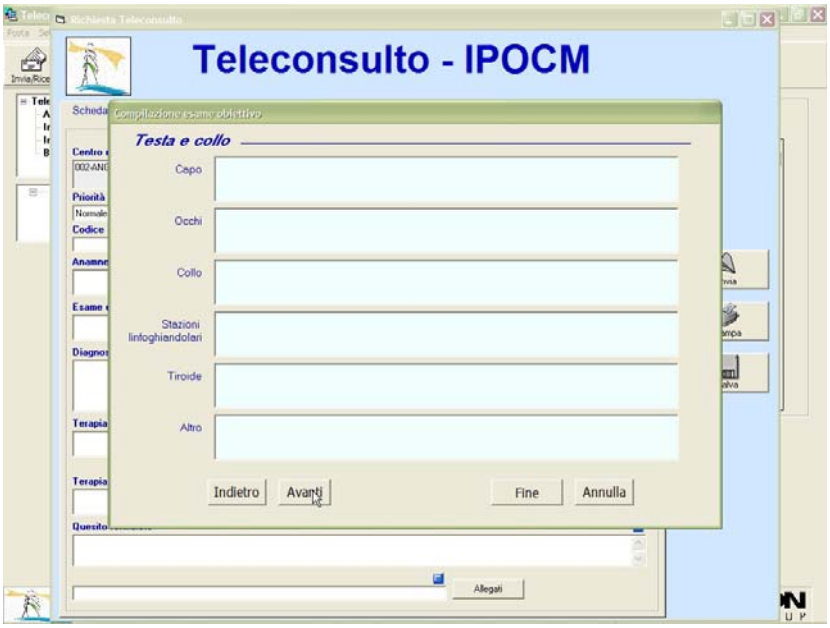
The “Requesting Centre” field will be automatically filled in.
In order that the request form is sent, the following fields must be filled in: Surname and Name of the referring Doctor, Speciality the teleconsultation is referring to (as selected from the pull-down menu) and the ICD9-CM code.
The normal “priority” is referred to teleconsultation times taking into account the fact that the referring Health Centre must reply to the Secretariat within 72 working hours from the date and time when it has received the teleconsultation request from the same.
High “ priority” means that the request for teleconsultation by the Health Centre is urgent but does not imply any obligation for the replying Health Centre.
The teleconsultation is completely anonymous.
The “Clinical case code” is an alphanumeric value attributed by the Health Centre to the clinical case treated in the teleconsultation.

It is possible to request the despatch of the teleconsultation to the same referring Centre having already treated another request for teleconsultation request by ticking off "Case already treated" with "Yes".
The "Code of the clinical case already treated" is the order number of the teleconsultation previously sent. This number is reported in "Form N." in the upper left side of the display of a teleconsultation sent and is also reported in the descriptions of the list of the teleconsultations sent.
The fields "Case history", "Presumed diagnosis", "Other previous therapies", "Other current therapies" and "Query" are fields for free text. The query submitted may refer to a second opinion, to a specific query, to a request for information etc.
All the fields for free compilation can run copy/paste operations and are fitted with a key to display the contents in a general window. They are configurated for the input of 3000 bytes.
To assist compilation of the "Clinical examination" a *wizard* is provided as shown in Fig. 18, by which it is possible to follow a standard procedure for typing relevant information about the specific pathology. The sections featured are the following:

- *Psychic state*
- *Skin and mucous membranes*
- *Head and neck*
- *Chest*
- *Abdomen*
- *Back and limbs*
- *Inguinocrural regions*
- *Exploratory actions*

Each section contains fields which may be filled in freely.
The key "End" shows a preview of the full clinical examination, before the definite confirmation, differently return to the guided compilation for editing

Figure 18 – Compilation of the clinical examination



By clicking on the " ICD9-CM Code" button, a tree menu will appear (Fig. 19) containing the codes according to the international OMS standard. By double clicking on the code opted for (for ex.: 003 – OTHER INFECTIONS FROM SALMONELLA) OR ON THE CODE OF THE CLASSIFICATION CHAPTER (FOR EX.: 001 – 009 INTESTINAL INFECTIONS), the same will be automatically typed in the form. In case of uncertainties, it is possible to specify "No code" by using the relative key. This information is compulsory for the despatch of the request form.

Figure 19 – Window for the input of the ICD9-CM code

The input of the *Previous or Current Pharmacological Therapy* is assisted by a guided compilation as shown in Fig. 20, by which the operator may tap in one or more drugs relative to the preceding or current therapy. For each drug it is possible to input more Proximate Principles with the relative dosage in addition to the drug modes of administration and posology.

Example: input of two drugs, each consisiting of two proximate principles.
To input the drug N.1:
Type proximate principle N.1 and its dosage.
Click on "New proximate principle".
Type the proximate principle N. 2 and its dosage.
Type the drug mode of administration and posology.

Click on "Input of a new drug" and type the drug N. 2.
Type the proximate principle N.1 and its dosage.

Click on “New proximate principle”.
Input the proximate principle N.2 and its dosage.
Type the mode of administration and the posology of the drug N.2.

For any check or editing required, arrows allow the data tapped in to be scrolled forward and backward. All the fields of the pharmacological therapy are compulsory. In case of transmission of incomplete information about the pharmacological therapy, fill “Other therapies…”

Tick off “No therapy” in case there are no other therapies to refer to.
Any further data may be tapped in the fields for free text relative to the therapies.
The key “Confirm” shows a preview of the whole therapy, from which it is possible to definitely confirm or return to the guided compilation.

Figure 20 – Compilation of the pharmacological therapy

In Fig. 21 the possibility of inserting attachments to be sent together with the form for teleconsultation request is shown. Any type of file may be attached in the formats commonly transmitted by email (.zip, .doc, .pdf,, .xls, .ppt, .gif, . jpg, . map ecc.), containing for ex., images from digital camera, texts and documents, videos of some minutes, DICOM files etc. Files are to be sent zipped (.zip extension). The list of files to be attached may be displayed by clicking on a general window (fig. 24). An attachment may be deleted by clicking on a delete key or may be displayed by clicking on the display key. In Fig. 22 a .jpg file is displayed. The lack of an adequate

display may give rise to errors. The links to web pages can be inserted in the form fields for free text.

WARNINGS ABOUT THE ATTACHMENTS

As for any other email software, also for this application sizes of the files attached are to be checked and the dispatch of zipped files is recommended (.zip extension).

For security reasons, the Secretariat will not receive files in .exe extension.

The teleconsultation is anonymous: any patients' identifying data present in any attachment are to be hidden.

Where feasible, indicate in the files' names or inside the same the "Clinical case code" of the teleconsultation form to which they are attached.

As concerns imaging, include a scaled ruler in the photographic image.

Figure 21 – Window for the insertion of attachments

Figure 22 – Example of a display of attachments

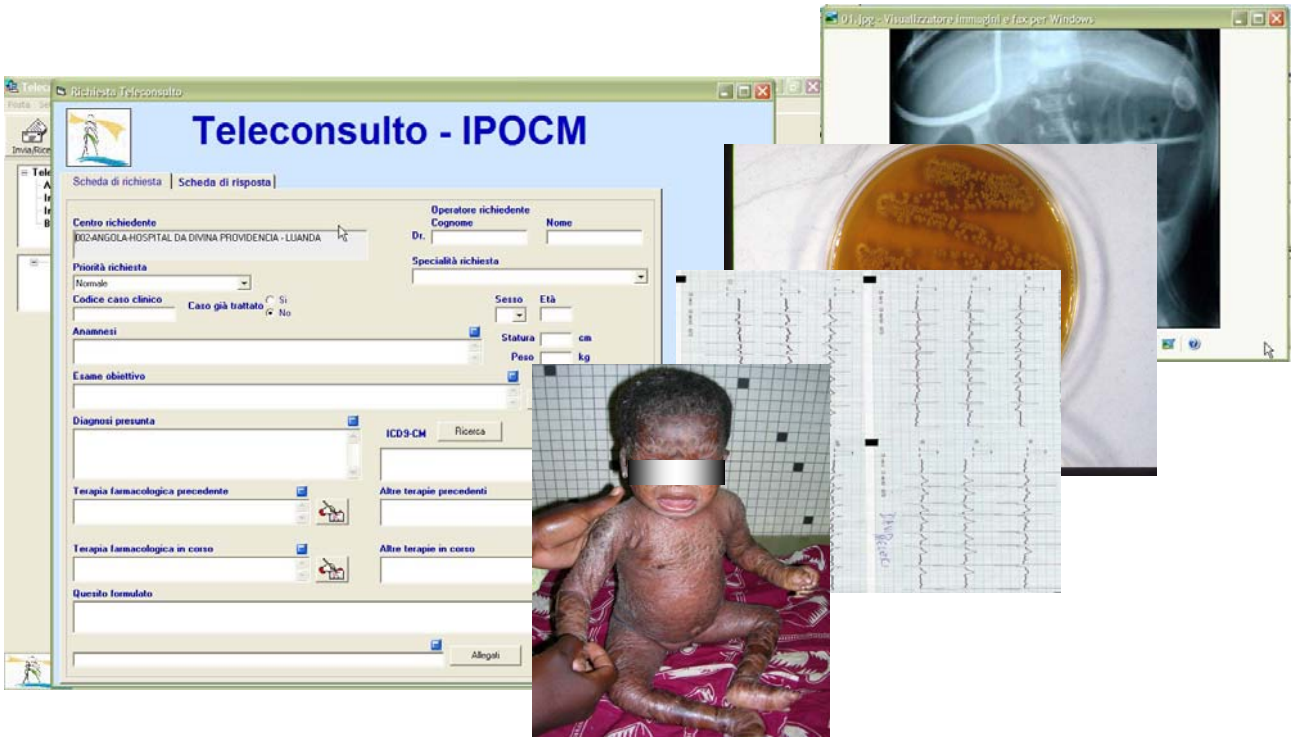
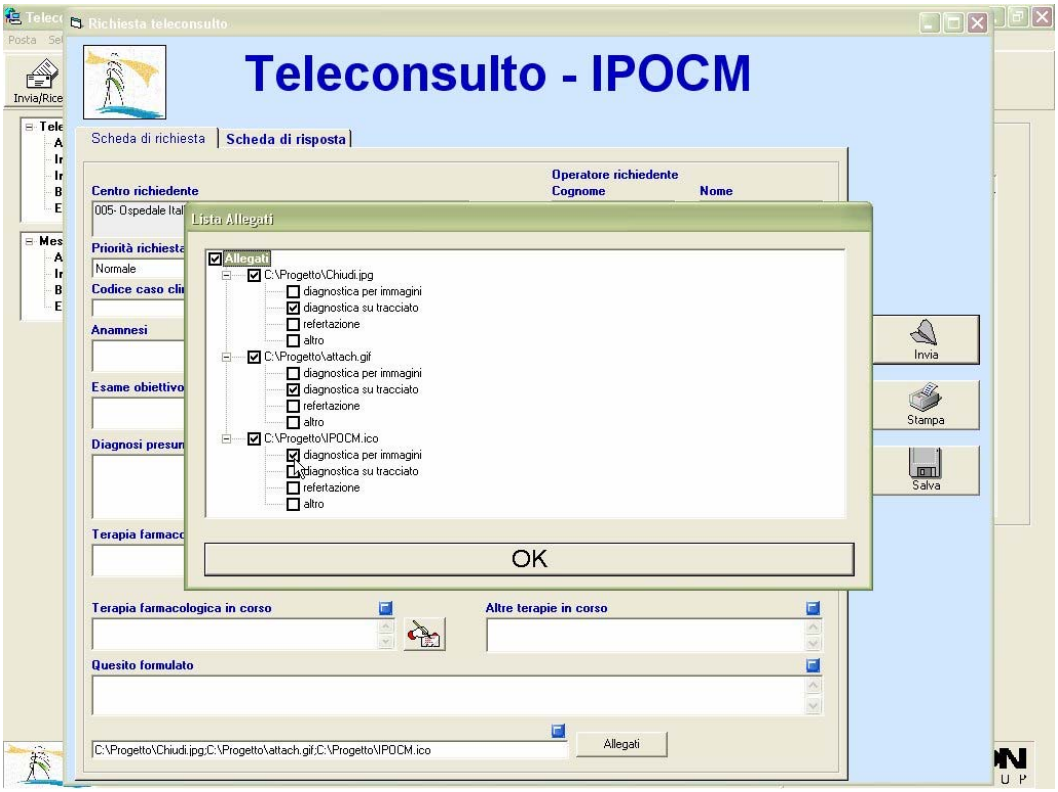


Figura 23 - Request for classification of attachments before dispatch



On sending the form, a menu requesting for classification of attachments will appear (fig. 23). For any file attached it will be necessary to specify:
- *imaging*
- *tracing*
-*reporting*
- *other.*

By clicking on the "Save" button, the teleconsultation request form can be saved in the *drafts* folder to be later filled in and sent.
Through the "Print" button, a print preview of the "IPOCM teleconsultation records" may be obtained (Fig. 27).
It can be printed on paper or it can be saved on a file in a format set by the operator, on a disk or any other medium.
This facility allows the building up of archives of teleconsultation records, organized in individual folders by the operator.

The teleconsultation request form is sent to the Secretariat by the "Send" button. This button inserts the form into the "Outgoing" mail (Fig. 10).

CAUTION

Click on the "Send/Receive" button in the upper left side of the page to definitely send the teleconsultation request. Do not close the application package before completing this operation!

During the *send/receive* operation, in case the connection is via modem, the remote access connection window will be displayed (Fig. 14) for the input of the user's name and/or password. Differently in case of a LAN connection, the form will be sent with no request.
The teleconsultation sent will then be inserted in the "Sent" teleconsultations list, including the indication of the number, operator, speciality and the dispatch date and time.
By double-clicking on a teleconsultation included in the "Sent" list, the request form and the attachments can be displayed. It can be saved as a draft through the "Save" button and then printed or saved on a file as "Record of the IPOCM teleconsultation" (cfr. § 3.6) by the "Print" button.
Lastly it may be deleted by pressing the mouse right key.

Figura 24 - Display of the attachment lisT

3.5 COMPILATION OF A REPLY FORM

The teleconsultation requests are included in the “Incoming” teleconsultation list.
These requests can be displayed by double-clicking on the teleconsultaion concerned (Fig, 25) and the replies can be filled in directly, or can be stored in “Drafts” to be later edited and sent.
Data contained in the request cannot be edited. The attachments can be saved and displayed.
The number indicated in the “Incoming” teleconsultation list refers to the number generated by the requesting Health Centre.
The teleconsultation code will univocally consist of the form number, the workstation number and the code of the requesting Health Centre.

To fill in the reply, the operator will select the “Reply Form” folder (Fig. 26).
The compilation of the “”Surname” and “Name” fields of the consulted specialist and the ICD9-CM code is compulsory. The input of the ICD9-CM code follows the same procedure described for the compilation of the teleconsultation requests (cfr. § 3.4).
The “Second opinion on the presumed diagnosis”, “Reply to query”, “Recommended pharmacological therapy”, “Other recommended therapies”, “Recommended diagnostic examinations” fields are for free text. By the general window button the text may be displayed. The maximum number of bytes available for compilation is about 3000.
The complete teleconsultation, including the request form and reply form with any attachment, can be saved in “Drafts” through the “Save” button. It may also be printed or saved as “Record of the

IPOCM teleconsultation" on a file in a folder of the hard disk or on any other peripheral through the "Print" button (cfr. § 3.6).
The attachments can be inserted following the same procedure described for a teleconsultation request. To send the reply *attachments* follow the same instructions as for the attachments to a request form.
When a reply to a teleconsultation is sent, it is inserted in the "Outgoing" list.
By clicking on the "Send/receive" button, it will be forwarded to the Secretariat (also via the Server workstation of the Health facility).

Figura 25 - Display of an incoming request form

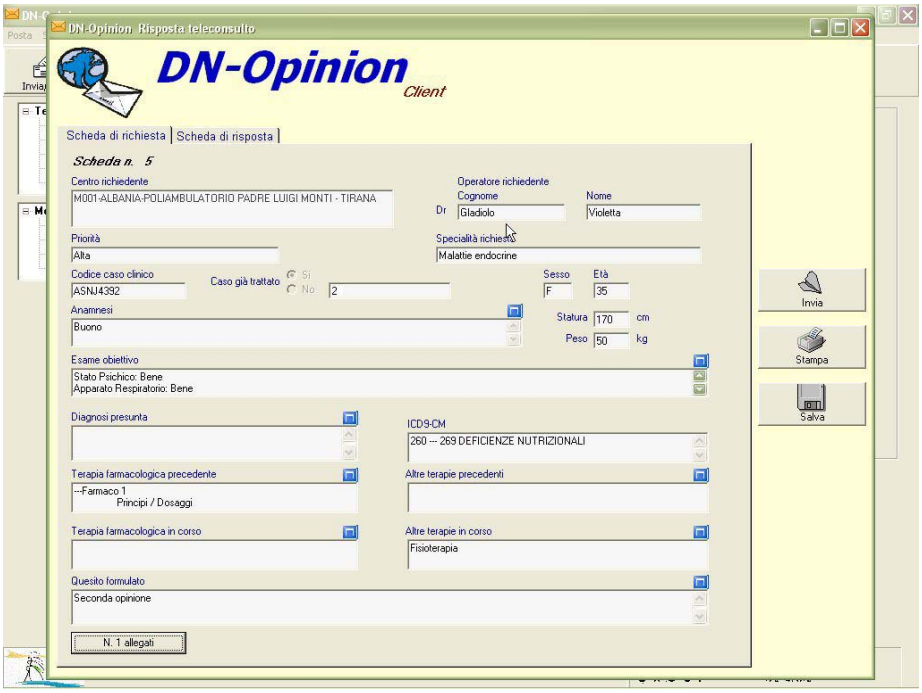
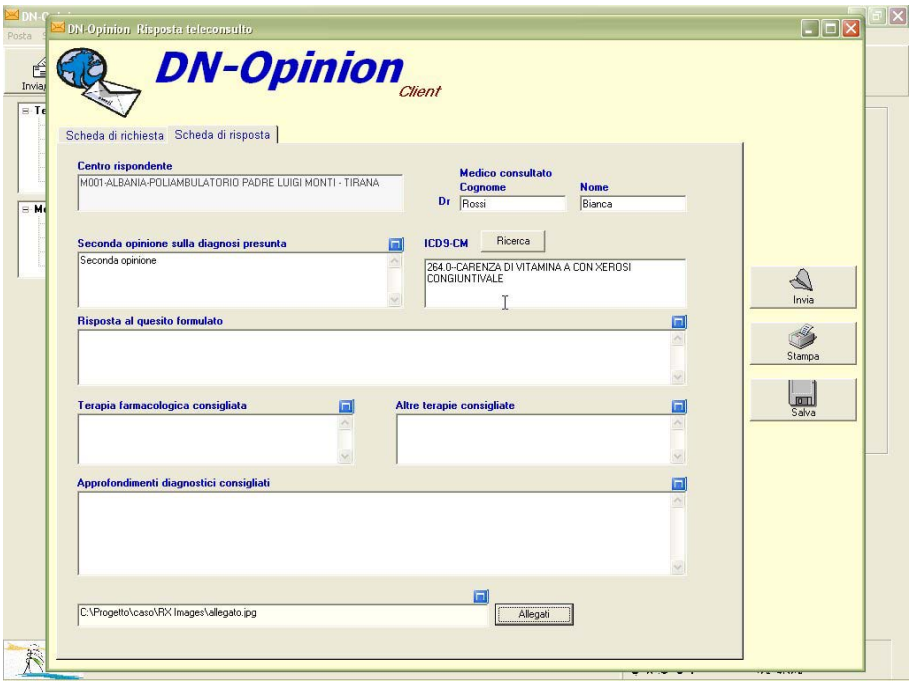


Figura 26 – A reply form



3.6 DISPLAY OF THE RECORD OF THE IPOCM TELECONSULTATION

A teleconsultation can be printed or saved as “Record of the IPOCM teleconsultation” on a file in a hard disk folder or on any other peripheral, by clicking on the “Print” button.
By clicking on the “Print” button the print preview will appear. The tool bar of the print window allows the file to be saved in any format. This facility allows the creation of individual personal archives. Here below a print preview in .doc format is reported.

3.7 PRINTOUT OF A TELECONSULTATION RECORD

The printout of a teleconsultation record includes the following information:

Date:21/02/05

Form number 26

Request form

Referring centre
M002-ANGOLA-HOSPITAL DA DIVINA PROVIDENCIA-LUANDA

Referring doctor
Surname Rossi
Name Mario

Requested priority Normal

Speciality requested Genetics

Gender M **Age** 3

Clinical case code AD54Z32 **Clinical case already treated** NO

Weight Kg 20 **Height cm.** 90

Case history

Clinical examination

IDC9-CM 740---759 GENETIC MALFORMATIONS

Presumed diagnosis

Previous pharmacological therapy

Other previous therapies

Current pharmacological therapy

Other current therapies

Query Second opinion

Request with N.2 attachments

Reply form

Replying centre
I014 – OSPEDALE PEDIATRICO BAMBINO GESU' - ROMA

Consulted specialist
Surname Bianchi
Name Carla

IDC9-CM 748.60— NOT SPECIFIED LUNG ANOMALIES

Second opinion on presumed diagnosis

Reply to query

Recommended pharmacological therapy

Other recommended therapies

Recommended diagnostic examinations

Reply with N. 3 Attachments

Attachments
c:\doc\Image.zip
c:\doc\Pictures.zip
c:\doc\.Documents.zip

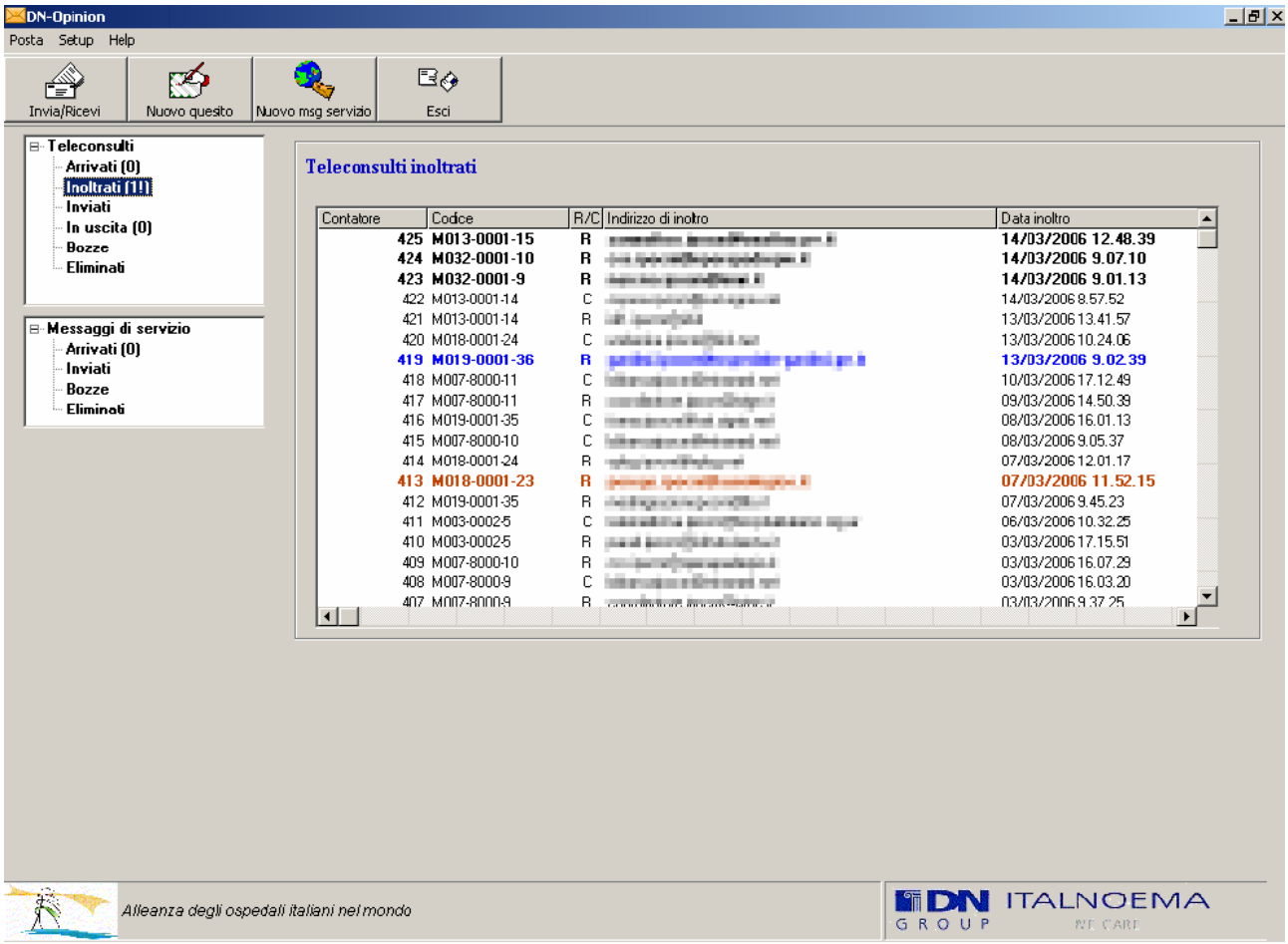
3.8 SERVER VERSION OF THE TELECONSULTATION

The Server version of the software application package for Health Centres is provided with the same functionalities of the Client version while allowing the transfer of teleconsultations to the Client workstations and viceversa, directly via the teleconsultation screen ("Forward" button). This version can be used by those Health Centres which prefer to manage the exchanges with the Secretariat through a single workstation and sort the teleconsultations themselves.

The Server version features a list of the "Forwarded" teleconsultations also providing monitoring and checking the status of the request vis-a-vis the standard time limits of 72 working hours agreed upon with the Health Centres in Italy. This status is also indicated through a different colour display of the teleconsultation in the "Forwarded" list: "red" if the 72 working hour limit has expired, "blue" if there are 24 hours to the time limit, "bold type" if forwarded for less than 48 working hours, not highlighted if completed).

The Server version provides additional operating and sending functionalities also as concerns service messages and distribution lists.

Figura 27 – List of the teleconsultations forwarded



3.9 VIDEOCONSULTATION VERSION

The software application videoconsultation version allows the transfer to the Secretariat of a request for the reservation of a videoconsultation to deeper analyse the case concerned by help of the corresponding Health Centre.

A videoconsultation may be requested by a Health Centre only after the relative teleconsultation has been completed or while it is being processed. This request for reservation may be submitted to the Secretariat directly through the screen of the reply to teleconsultation (in case of Health Centres abroad), or during the transfer of a reply (in case of Health Centres in Italy). The Secretariat will submit it to the corresponding Health Centre (being summoned) and will manage the reply of the Centre summoned to the Centre summoning and the generation and transfer of the invitations to the videoconsultation (transfer of links to the web portal and updated data to the summoner and summoned party).

The home page of this version also provides the access to the lists of messages dedicated to the reservation of videoconsultations.

In particular, it is possible to display the frames concerning the reservations of a videoconsultation contained in the list folder:

- Reservations requested by a Health Centre in Italy requesting a deeper examination of the case parallel to the transfer of a reply to a teleconsultation, or by a Health Centre abroad requesting a deeper examination after the reception of a reply;
- Reservations rejected, including the list of the relative requests/replies;
- Reservations sent, including the list of requests sent for reservations of a ;
- Outgoing reservations, including pending reservation requests or replies waiting for a click on the “Send/receive” button to be definetly sent.

It is possible to display the screens relative to the list of *replies* to requests for reservation of a videoconsultation (replies sent).

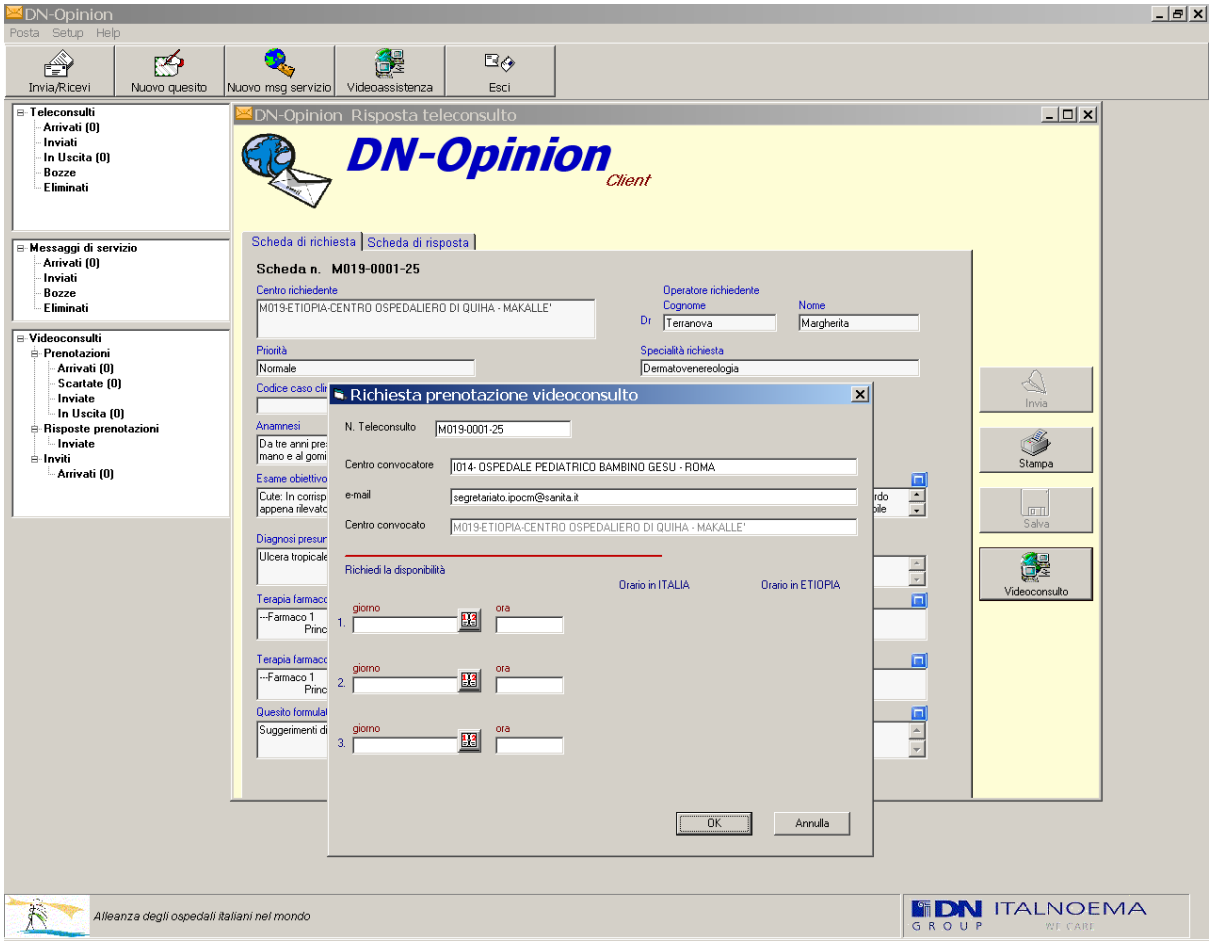
It is possible to display the screens relative to the list of invitations to a videoconsultation, including the day and time agreed upon and the videoconsultation *link* as sent by the Secretariat.

In this version, through the teleconsultation screen a “Videoconsultation” button may be clicked on to display a form to be fully filled in with the day and time proposed for the videoconsultation with the doctor involved (three alternative dates are possible). On filling in the fileds relative to days and time, conversions to local time in Italy and in the foreign country will appear.

Invitations to the videoconsultation on the day and time agreed upon will be sent to the e-mail address notified.

Similarly, an operator working for a Health Centre in Italy may request a videoconsultation with a referring doctor, by replying yes to the automatic request the system submits the same on dispatch of the reply to a teleconsultation, concerning the request for synchronous connection (videoconsultation).

Figura 28 - Videoconsultation request

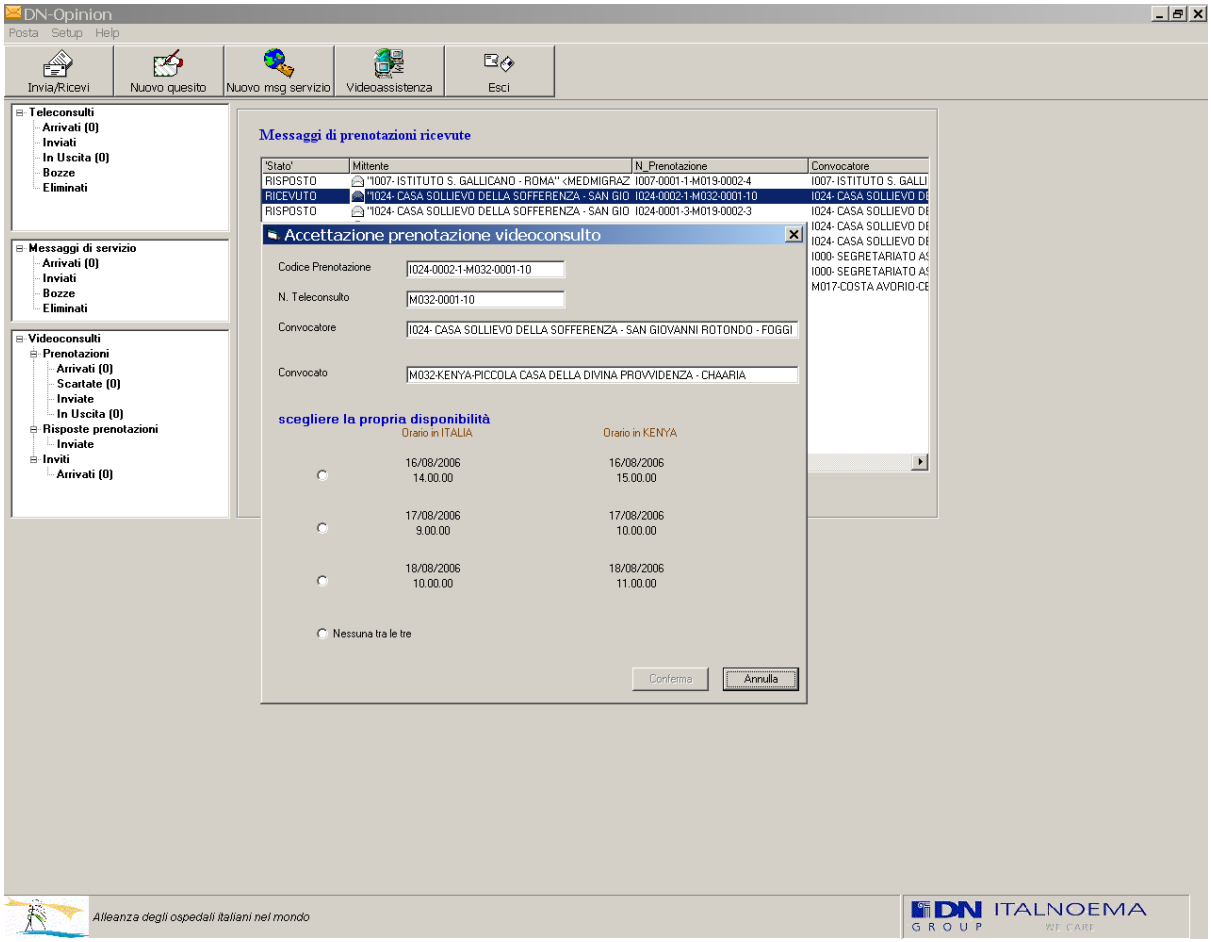


The arrival of a request, a reply or invitation to a videoconsultation is reported in the list of the incoming reservations and is processed similarly to the incoming teleconsultation list (bold types and number of not read reservations).

By clicking on a single reservation, the form with the data concerning the videoconsultation request is diplayed (that is reservation code, teleconsultation code, names of the summoning Health Centre and of the summoned Health Centre). To reply to a request select day and time chosen, or state that none of the three options is accepted (videoconsultation rejected). By clicking on the “Confirm” button, the reply will be included in the *outgoing* reservation list and will be actually sent by clicking on the “Send/receive” button.

The summoner may propose new dates, refilling and reprocessing the same form.

Figura 29 – Reply to a videoconsultation reservation request

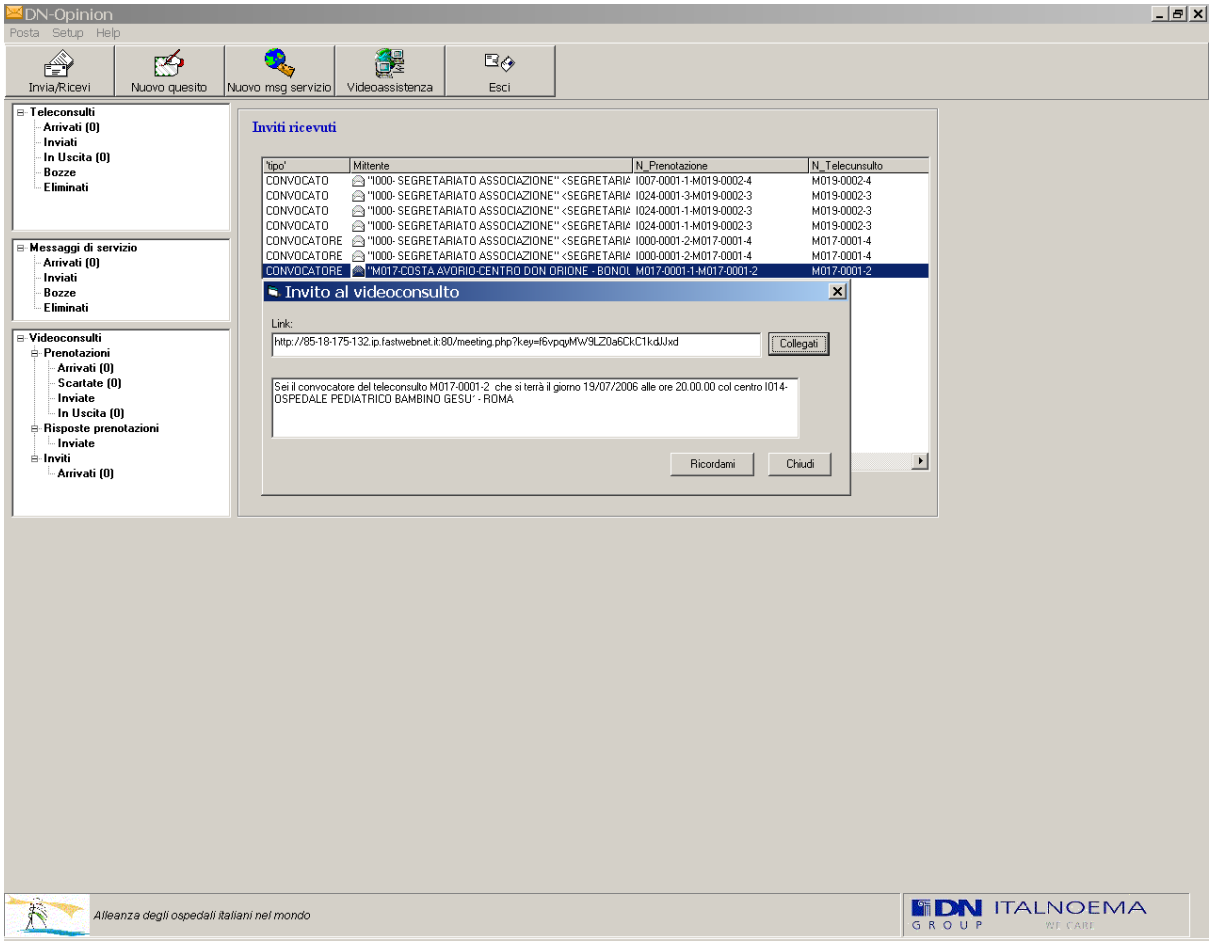


Lastly the list of the "Invitations" contains messages from the Secretariat transmitting the web address (link) for access to the portal of videoconsultations, to which the summoning and summoned operators will connect at the date and time agreed upon, for the videoconsultation to take place.
This web address can be accessed from any workstation fitted with a browser and ActiveX.

CAUTION

The operator *summoned* cannot get the status of "connected" until the summoning operator is connected.

Figura 30– Invitation to a videoconsultation

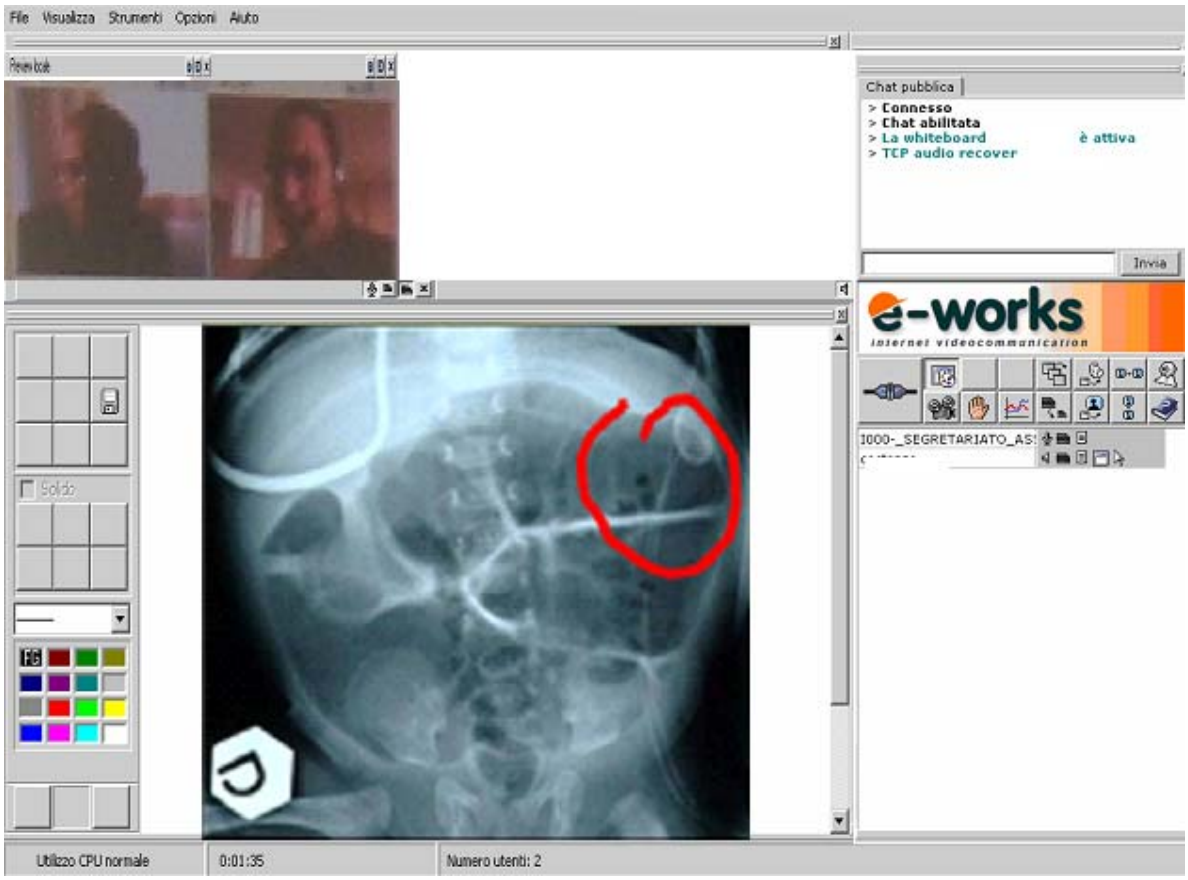


CAUTION

The summoned doctor cannot connect to the service until the summoning doctor is connected.

On the day and time agreed upon, by clicking on the “Connected” button of the invitation message, or by copying the reported link in the Internet browser address field, the operator may access to the portal of the videoconsultation. The first time a videoconsultation takes place on a given workstation, the system downloads the software (plug-in) onto that workstation. After the automatic installation of this software the system will display a videoconsultation start screen.

Figura 31 – Display of a videoconsultation



6. Here below operating macroareas displayed by the videoconsultation are reported. For any detail about the software operativity refer to the E-Works - Ew2 Videoconferencing software manual "User manual" version 2.2.0 – 2005.

The area in the upper left side of the screen is dedicated to the video images casted by the webcam of the summoner and summoned.

The area on the left of the screen is dedicated top down to:

- virtual chatting;
- the connect/disconnect button (the two plugs connected indicate the connection is on) followed by *shortcuts* buttons. By clicking on the icons, the user may take part in the meeting in the mode indicated by the relative icon (for ex., consultation registration, use of devices available on the workstation, etc.). Modes of any participation (active icon) are established by the summoner;
- the list of the names of the participants (the name of the Health Centre of the summoner and that of the Health centre of the summoned operator), matched with the icons relative to the modalities of participation in the meeting to which each participant is enabled as established by the summoner. The summoner may change participation modalities at any time by acting on the same icons, or by clicking with the mouse right key on the name of the participant and acting on

the items of the context menu (for example enabled/disabled audio, pubblication on the whiteboard enabled/disabled etc.).

The area in the lower middle of the page is dedicated to the display of the cooperation panel (whiteboard). On it different files may be displayed and contemporarily seen by the participants.

The area in the lower left side of the page is dedicated to buttons concerning the publication in the whiteboard. Active buttons are marked with the icons relative to the actions to which the participant is enabled. By operating on these buttons it is possible to open and share files Operando su tali bottoni è possibile aprire e condividere file presenti in locale sulla postazione locally available on the workstation, as share actions on them (for example scrolling texts or point with a pencil areas of an image etc.).